

LAST REVIEW: 2009-2010
(i.e. 2003-2004)

NEXT REVIEW: 2014-2015
(i.e. 2008-2009)

STATUS: A
(A, I, D)

COURSE TITLE: Microprocessor II

COMMON COURSE NUMBER: CET 2123C

CREDIT HOURS: 4

CONTACT HOUR BREAKDOWN

(per 16 week term)

CLOCK HOURS: 80
(Voc. Course ONLY)

Lecture: 56 Lab: 24

Clinic: Other:

PREREQUISITE(S): CET 1114C and CET 1123C

COREQUISITE(S): None

PRE/COREQUISITE(S):

COURSE DESCRIPTION:

Analysis of 8 bit and 16/32 bit microprocessors and microcomputers with emphasis on logic, timing and interfacing on MC 68000 Microprocessor; The student will design circuits and programs to interface memory and peripheral devices in a microcomputer based system. Extensive laboratory practice in integral part of this course. Student fee is charged.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s):

Area

General Education Requirements – Associate in Science Degree (AS), meets Area(s):

Area

UNIT TITLES

- 1. Introduction to Input/Output Techniques.**
- 2. Interfacing to Memory.**
- 3. Parallel Interfacing through a peripheral interface adapter.**
- 4. Serial Interfacing through a Asynchronous Communications interface adapter.**
- 5. Interfacing Applications using PIA and ACIA.**
- 6. Design, construction and testing of a microprocessor based circuits.**

EVALUATION:

Please provide a brief description ([Exams](#), [Homework](#), [Labs](#), [Projects](#)) that details how students will be evaluated on the course outcomes. **Students will be assessed through a variety of means. Evaluation may include, but is not limited to, the following: exams, quizzes, presentations, portfolios, discussions, class participation, attendance, projects, networking diagnosis, co-ops, practical, internships, externships, and research reports.**

Common Course Number: CET 2131C

UNITS

Unit 1 Introduction to Input / Output techniques

General Outcome:

1.0 The students shall: be able to explain microprocessor system configuration and basic interfacing techniques.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 1.1 Describe the use of a microprocessor in implementing a microcomputer system.**
- 1.2 Describe differences between families of computers and microprocessors**
- 1.3 Explain the purpose and operation of each signal on the microprocessor.**
- 1.4 Draw a typical microprocessor system memory map and explain memory-mapped I/O**
- 1.5 Explain the operation and application of tristate buffers.**
- 1.6 Implement the connections and programming for interrupt-driven I/O.**
- 1.7 Design and construct an address decoding circuits.**

Common Course Number: CET 2131C

Unit 2 Interfacing to the memory

General Outcome:

2.0 The students shall: be able to explain the operation of memory devices and their interconnections in a microprocessor-based computer.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1 List and briefly explain the major families of memory technology.**
- 2.2 Describe the characteristics of memory chips including RAM, EPROM and EAROM.**
- 2.3 Describe the functions of the bins on selected memory chips.**
- 2.4 Analyze and troubleshoot the memory interface of an operational microprocessor system.**
- 2.5 Describe the process of erasing and programming an EPROM.**
- 2.6 Design and implement the inclusion of memory chips in microprocessor system.**

Common Course Number: CET 2131C

Unit 3 Parallel Interfacing through a Peripheral Interfaces Adapter (PIA)

General Outcome:

3.0 The students shall: be to explain the characteristics and basic applications of PIA

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 3.1 Describe the architecture of PIA.**
- 3.2 Describe the function of each pin of a PIA.**
- 3.3 Write a machine – level program to initialize a PIA.**
- 3.4 Use a PIA to implement the connections and programming for input and output devices in microprocessor system.**

Common Course Number: CET 2131C

Unit 4 Serial Interfacing through a Asynchronous Communications interface adpater

General Outcome:

- 4.0 The students shall: be able to explain the characteristics of basic applications of an ACIA.**

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 4.1 Describe the architecture of an ACIA.**
- 4.2 Describe the function of each bin of an ACIA.**
- 4.3 Write a machine-level program to initialize an ACIA.**
- 4.4 Observe the timing signals of the ACIA used to interface the 68000 microprocessor and peripheral.**

Common Course Number: CET 2131C

Unit 5 Interfacing Applications using the PIA and ACIA.

General Outcome:

5.0 The students shall: be able to demonstrate an understanding of typical applications of microprocessor systems.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 5.1 Program and interface input and output devices through a P IA.**
- 5.2 Program and interface input and output devices through ACIA.**
- 5.3 Describe the operation and application of A-D and D-A converter.**
- 5.4 Describe the operation of microcontrollers.**

Common Course Number: CET 2131C

Unit 6 Design Construction and Testing of a Microprocessor- Based Circuits

General Outcome:

6.0 The students shall: be able to design, build and test a microprocessor-based circuits.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 6.1 Design a microprocessor- based interface.**
- 6.2 Build and document the circuit to implement a microprocessor-based design.**
- 6.3 Test a microprocessor- based circuit for correct operation.**
- 6.4 Explain the operation of the circuit orally and in writing.**